Two new cumacean (Crustacea) species from the deep South Atlantic

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Watling L. & Gerken S. 1999. — Two new cumacean (Crustacea) species from the deep South Atlantic. *Zoosystema* 21 (4) : 661-669.

ABSTRACT

Two new species of cumaceans are described from the deep South Atlantic off the coast of Brazil, *Gaussicuma dufresnae* n. sp. and *Campylaspides abyssotrucidatus* n. sp. Both species are in genera that typically occur in the deep sea. *G. dufresnae* is unique in having the following combination of features: maxilliped 3 basis not distally produced, uropod peduncle as long as rami, uropod rami subequal in length. In addition, of all the deep-sea species in this genus, *G. dufresnae* exhibits the least extension of the telsonic somite. *Campylaspides abyssotrucidatus* n. sp. differs from *Campylaspides grandis* Fage, 1929 and *Campylaspides spinifera* Jones, 1973 in having a smooth carapace and having additional large spines on maxilliped 3.

KEY WORDS
Cumacea,
new species,
deep sea,
South Atlantic.

RÉSUMÉ

Deux nouvelles espèces de cumacés (Crustacea) des eaux profondes de l'Atlantique Sud.

Deux nouvelles espèces de cumacés sont décrites de l'Atlantique sud-occidental, au large de la côte brésilienne, *Gaussicuma dufresnae* n. sp. et *Campylaspides abyssotrucidatus* n. sp. Les nouvelles espèces appartiennent à des genres typiquement d'eaux profondes. *G. dufresnae* est la seule espèce du genre à posséder à la fois le basis du troisième maxillipède sans avancée distale, pédoncule de l'uropode aussi long que les rames et uropodes à rames de longueur similaires. De plus, parmi toutes les espèces d'eau profonde de ce genre, *G. dufresnae* a le plus court telson. *Campylaspides abyssotrucidatus* n. sp. diffère de *Campylaspides grandis* Fage, 1929 et de *Campylaspides spinifera* Jones, 1973 par la carapace lisse et des épines plus longues sur le troisième maxillipède.

MOTS CLÉS
Cumacea,
nouvelles espèces,
eaux profondes,
Atlantique Sud.

INTRODUCTION

Three vials containing a total of eight cumaceans were received from *Marion Dufresne* cruise TAAF MD55 operating in the deep sea off the coast of Brazil. Most of the specimens were too damaged to identify positively to species. Of the five specimens which could be assigned to a genus, two were recognized as new species, one was a previously described species, but the others could not be determined beyond the level of genus.

The type material has been deposited in the collections of the Museu Nacional, Rio de Janeiro (MNRJ) and the remaining material in the collections of the Universidade Santa Úrsula, Rio de Janeiro.

ABBREVIATIONS

Stn	station;
CB	Blake trawl;
DS	Sanders dredge.

LIST OF STATIONS

For a map showing location of the oceanographic stations conducted by the *Marion Dufresne* in Southeastern Brazil, see Tavares 1999.

Stn 38 DS66, 19°09'S, 37°35'W, 3450 m, *Campylaspides abyssotrucidatus* n. sp., *Gaussicuma dufresnae* n. sp., and three specimens too badly damaged to determine genus; stn 65 CB106, 24°00'S, 42°14'W, 1020 m, *Cumellopsis bicostata* Jones, 1984; stn 42 CB76, 18°58'S, 37°49'W, 600-637 m, ?*Stenotyphlops* sp. (missing telson and uropods), *Procampylaspis* sp. (carapace only).

Family BODOTRIIDAE T. Scott, 1901
Subfamily VAUNTHOMPSONIINAE
G. O. Sars, 1878

Gaussicuma Zimmer, 1907

TYPE SPECIES. — *Gaussicuma vanhoffeni* Zimmer, 1907 [by monotypy].

ADDITIONAL SPECIES. — *G. gurjanovae* Lomakina, 1952, *G. gloriosae* Ledoyer, 1988, *G. kermadecense* Jones, 1969, *G. scabrum* Jones, 1969, and *G. dufresnae* n. sp.

EMENDED DIAGNOSIS. — Pseudorostral lobes not meeting in front of eyelobe; eye absent; first pedigerous somite visible dorsally; telsonic somite extended between uropod peduncles; maxilliped 3 basis longer than distal portion of leg, sometimes distally produced; exopods present on maxilliped 3 and pereopods 1-3 in ♀ and on maxilliped 3 and pereopods 1-4 in ♂.

REMARKS

All species in this genus, with the exception of *G. gurjanovae*, are found at depths exceeding 3000 m and thus far appear to be restricted to areas of the sea bottom where Antarctic bottom water has warmed to about 1°C. *G. gurjanovae* departs from this pattern in being found in the Northwest Pacific at depths generally less than 100 m. Unfortunately, the descriptions of most of the species in this genus do not include details of the mouth appendages, consequently, while the true affinities of *G. gurjanovae* cannot be determined at this time, it most likely will be found to differ from the deep water species in some details.

Gaussicuma dufresnae n. sp.
(Figs 1-3)

MATERIAL EXAMINED. — TAAF MD55/Brazil 1987, stn 38 DS66, 19°09'S, 37°35'W, 3450 m, 25.V.1987, subadult ♂ holotype (MNRJ 7305). Sand bottom.

ETYMOLOGY. — Named in honor of the research vessel *Marion Dufresne*.

DESCRIPTION

Subadult male, total length 14 mm. Carapace more than 1.5 time as long as high and less than 0.25 time total body length. Pseudorostral lobes notched distally but not meeting in front of eyelobe. Carapace smooth except for a double row of small serrations forming an anterior downsloping dorsal crest. Anterolateral angle acute and produced above a serrate anteroventral margin. Antennal notch deep and broadly rounded.

Pereon with all five somites visible dorsally and laterally. No ridges or projections visible on sternites.

Pleon somites smooth, last moderately produced between uropod peduncles.

Antenna 1 flagellar articles missing. Peduncle article 1 equal in length to articles 2 and 3 toge-

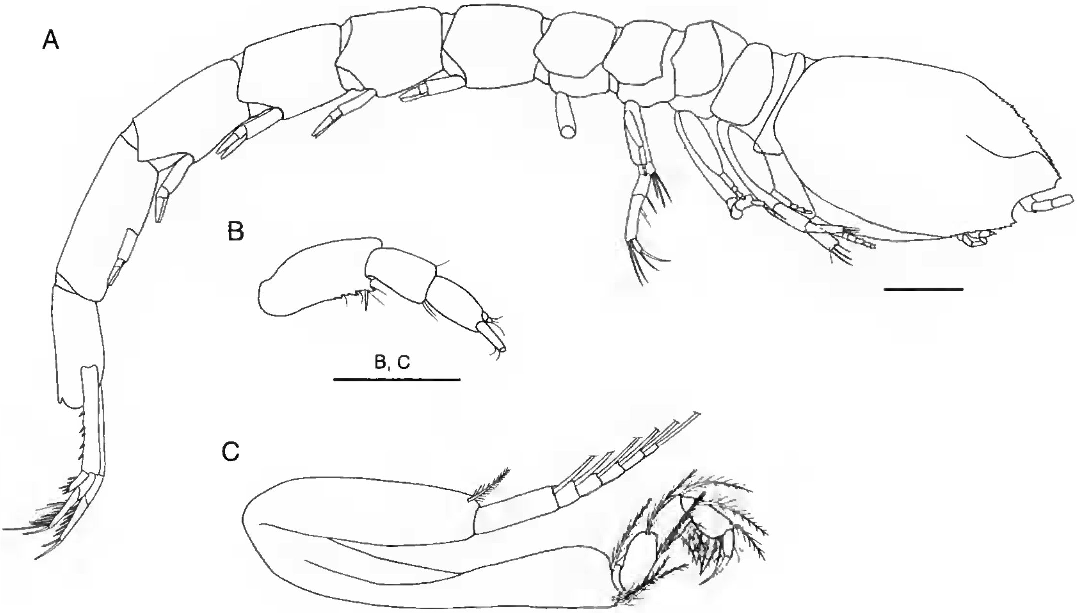

FIG. 1. — *Gaussicuma dufresnae* n. sp. TAAF MD55/Brazil 1987, stn 38 DS66, 19°09'S, 37°35'W, 3450 m, 25.V.1987, subadult ♂ holotype (MNRJ 7305); **A**, whole body, side view; **B**, antenna 1; **C**, maxilliped 3. Scale bars: A, 1 mm; B, C, 0.5 mm.

ther, with spines distally on dorsal margin. Peduncle articles 2 and 3 subequal in length. Accessory flagellum minute, 2-articulate.

Maxilliped 3 basis slightly more than twice length of remaining articles together, slightly rounded and without projection distally, and armed only with three distal plumose setae. Ischium very short; merus, carpus, and propodus subequal in length and bearing few plumose setae. Dactyl about one third length of propodus and bears long terminal spine-like seta. Exopod extends about four fifths length of endopod.

Pereopod 1 broken, exopod extending beyond basis of endopod.

Pereopod 2 broken, with propodus and dactyl missing. Ischium very short; merus and carpus subequal in length.

Pereopod 3 basis as long as remaining articles together. Carpus with strong array of stiff, multiannulate setae on distal margin. Dactyl about one third length of propodus. Exopod extends to end of merus.

Pereopod 4 nearly as long as pereopod 3. Basis about three fourths length of remaining articles together and bears single plumose seta on distal margin. Ischium as wide as long and with row of stiff microserrate setae on anterodistal margin. Merus one half length of carpus, with single multiannulate seta on lower part of anterior margin. Carpus four times as long as wide, with single multiannulate seta on anterior margin; posterior margin with three multiannulate setae distally and single plumose seta proximally; distal margin with two multiannulate setae. Propodus and dactyl subequal in length, each with single distal seta. Exopod reduced, about one half length of exopods on pereopods 1-3.

Pleopods on pleonites 1-5, without fully formed setae. Exopod uniarticulate, bearing process on internal margin that extends across endopod basal article.

Uropod peduncle about as long as rami, bearing about 10 spine-like setae, some short and some long, along inner margin. Rami subequal in length. Endopod 2-articulate, proximal and distal articles subequal in length; proximal article well festooned with setae on inner and outer margins; distal article narrower than proximal, with simple

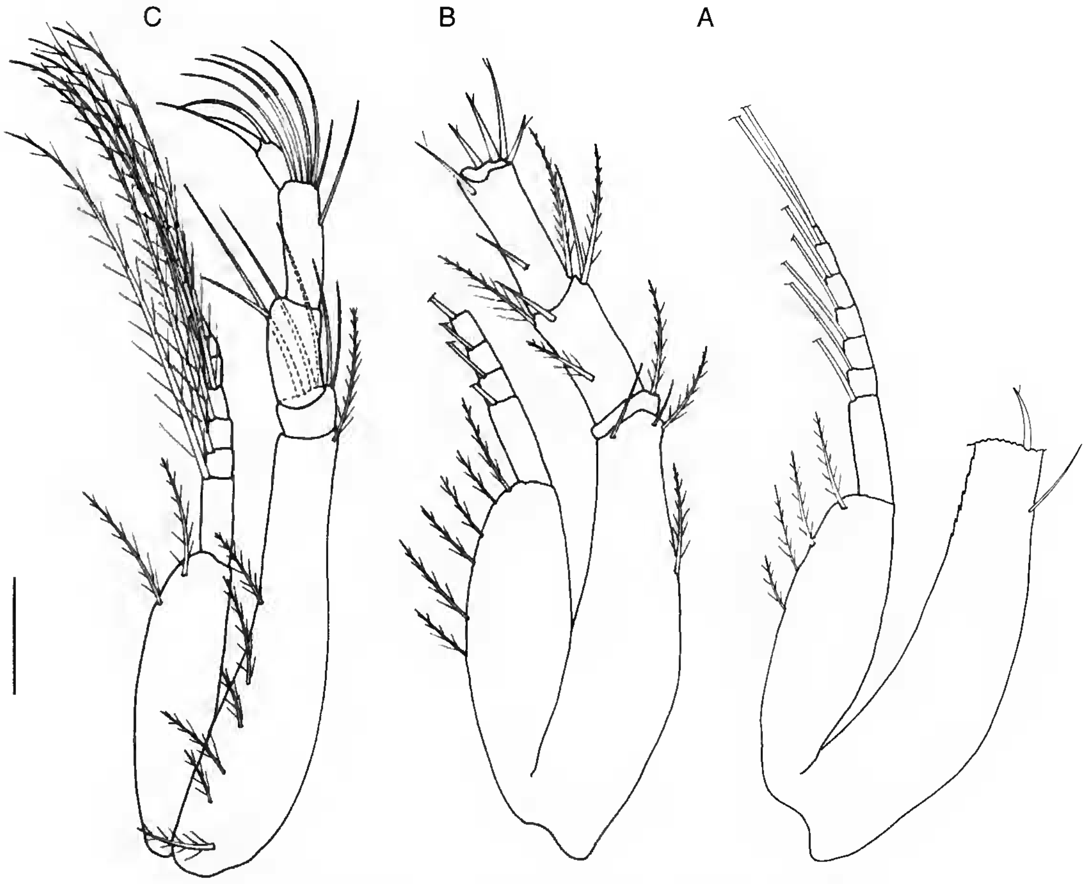

FIG. 2. — *Gaussicuma dufresnae* n. sp. TAAF MD55/Brazil 1987, stn 38 DS66, 19°09'S, 37°35'W, 3450 m, 25.V.1987, subadult ♂ holotype (MNRJ 7305); **A**, pereopod 1; **B**, pereopod 2; **C**, pereopod 3. Scale bar: 0.5 mm.

setae on distal two thirds of inner and outer margins, terminal setae about as long as article itself. Exopod basal article about one half length of distal, without setae; distal article with numerous simple setae on outer margin, about eight plumose setae on inner margin, and three terminal setae equal in length to those of endopod.

REMARKS

This species superficially resembles *G. scabrum*, described by Jones from the deep Tasman Sea. However, *G. dufresnae* is unique in having the following combination of features: maxilliped 3 basis not distally produced, uropod peduncle as long as rami, uropod rami subequal in length. In addition, of all the deep-sea species in this genus, *G. dufresnae* exhibits the least extension of the telsonic somite. The lack of prolongation of the maxilliped 3 basis distal margin removes one feature that could be used to distinguish all the deep-sea species of this genus from the shallow North Pacific species, *G. gurjanovae*.

Family NANNASTACIDAE Bate, 1866
Genus *Campylaspides* Fage, 1929

TYPE SPECIES. — *Campylaspides grandis* Fage 1929 [by monotypy].

ADDITIONAL SPECIES. — *C. canariensis* Jones, 1984, *C. echinata* Ledoyer, 1988, *C. spinifera* Jones, 1973, and *C. abyssotrucidatus* n. sp.

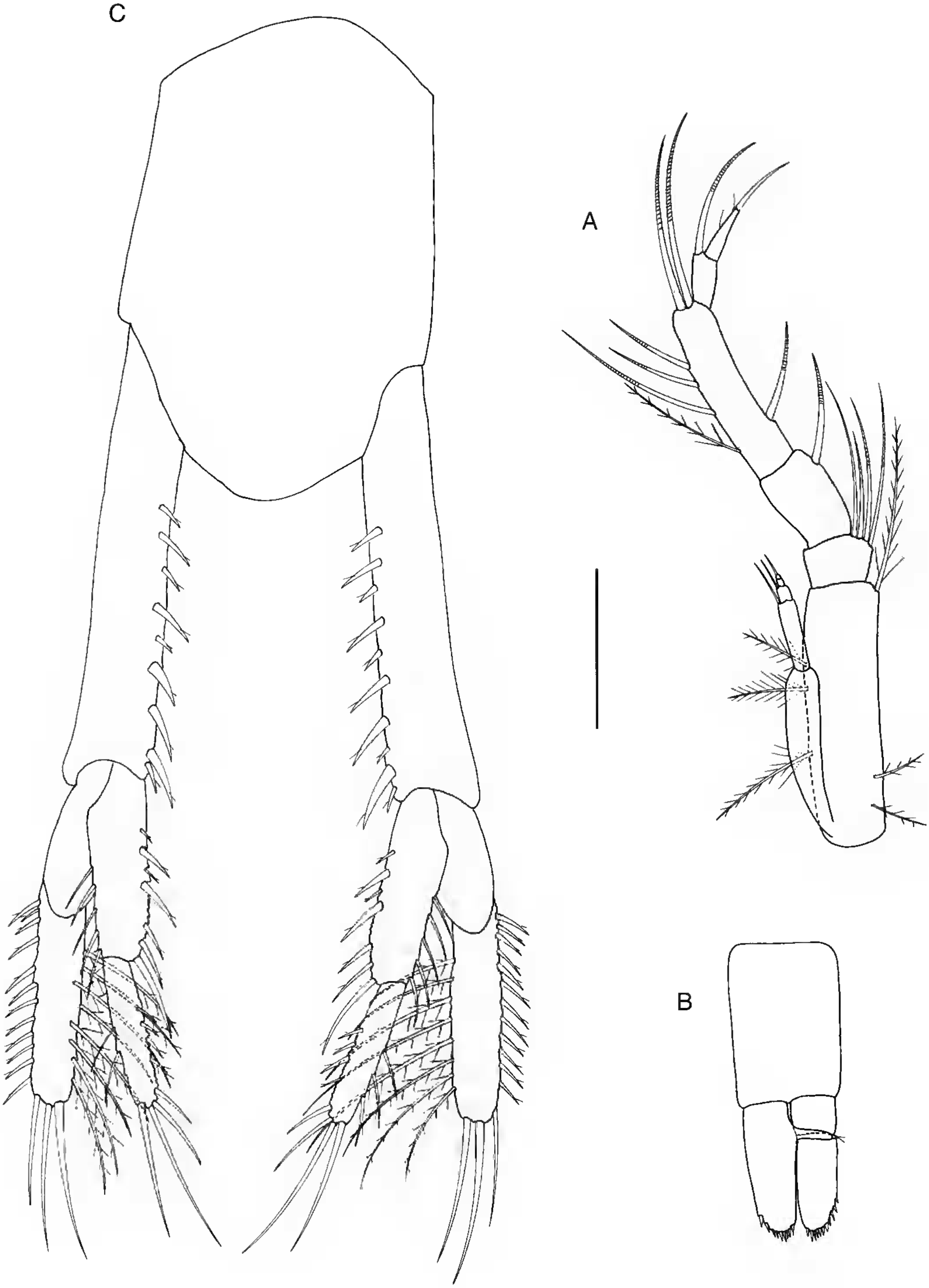

FIG. 3. — *Gaussicuma dufresnae* n. sp. TAAF MD55/Brazil 1987, stn 38 DS66, 19°09'S, 37°35'W, 3450 m, 25.V.1987, subadult ♂ holotype (MNRJ 7305); **A**, pereopod 4; **B**, pleopod 1; **C**, uropods (partially reconstructed). Scale bar: 0.5 mm.

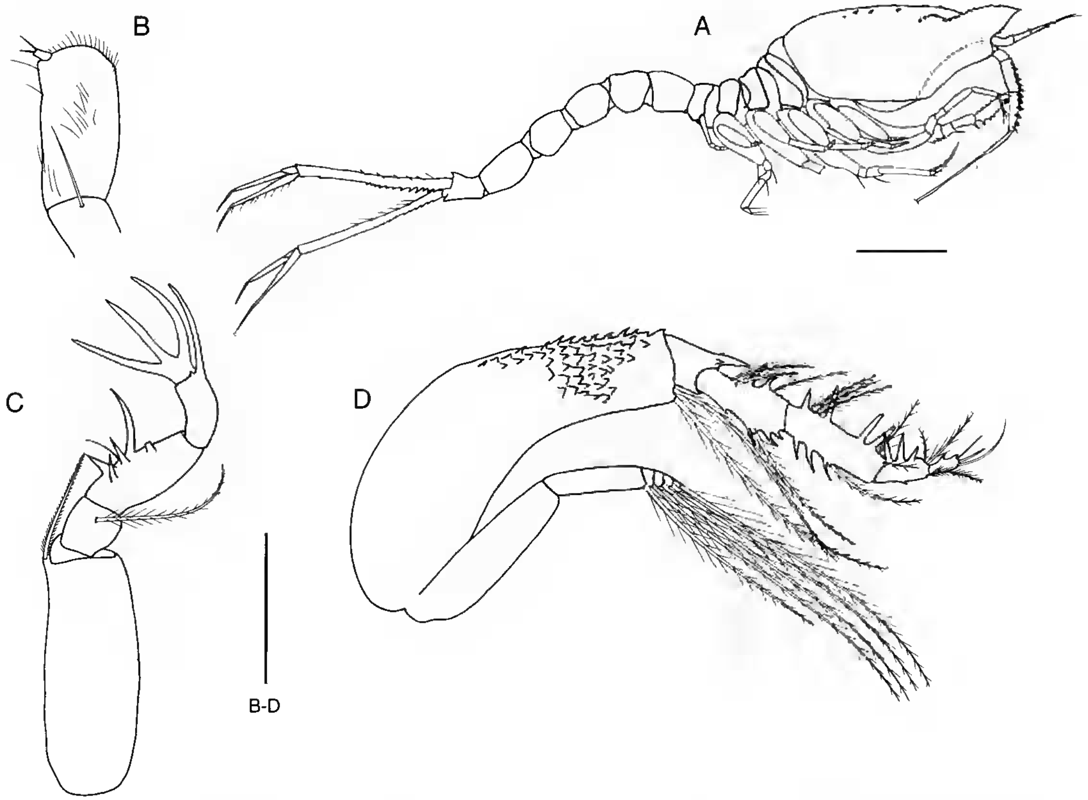

FIG. 4. — *Campylaspides abyssotrucidatus* n. sp. TAAF MD55/Brazil 1987, stn 38 DS66, 19°09'S, 37°35'W, 3450 m, 25.V.1987, adult ♂ holotype (MNRJ 7306); **A**, whole body, side view; **B**, maxilliped 1; **C**, maxilliped 2; **D**, maxilliped 3. Scale bars: A, 1 mm; B-D, 0.5 mm.

DIAGNOSIS. — Pseudorostral lobes elongate, united medially anteriorly; eyelobe rudimentary; ♂ antenna 2 with long flagellum, peduncle articles 4 and 5 subequal, both with strong covering of aesthetascs; maxilla 2 a single plate; maxilliped 1 3-articulate, terminal article minute; maxilliped 2 dactyl trident-shaped; maxilliped 3 leg-like, merus to propodus not widened; ♀ with exopods on maxilliped 3 and pereopods 1, 2; ♂ with exopods on maxilliped 3 and pereopods 1-4.

REMARKS

This is a deep-sea genus known so far only from the Atlantic and western Indian Oceans. It is distinguished by the form of the dactyl on maxilliped 2, which is trident-like, although in some cases the difference is not as strong as the following statement implies. The overall form of maxilliped 2 is very similar to that of *Campylaspis*, including the presence of a large spine-like seta on the distal margin of the propodus. There are also some species of *Campylaspis* where the dactyl consists of two spine-like processes between which is a single seta. *Campylaspides* differs from these species by having the middle spine-like process fused to the basal area between the other two and as long as the others. In the form of maxilliped 1 *Campylaspides* is indistinguishable from *Campylaspis*. In the new species described below, maxilliped 2 was oriented such that the trident-shaped dactyls came together in the frontal plane below the other mouth appendages, seemingly forming a spear-like device for prey capture. This, together with the styliform mandible molar, suggests that members of this genus are predators, but the preferred food remains unknown.

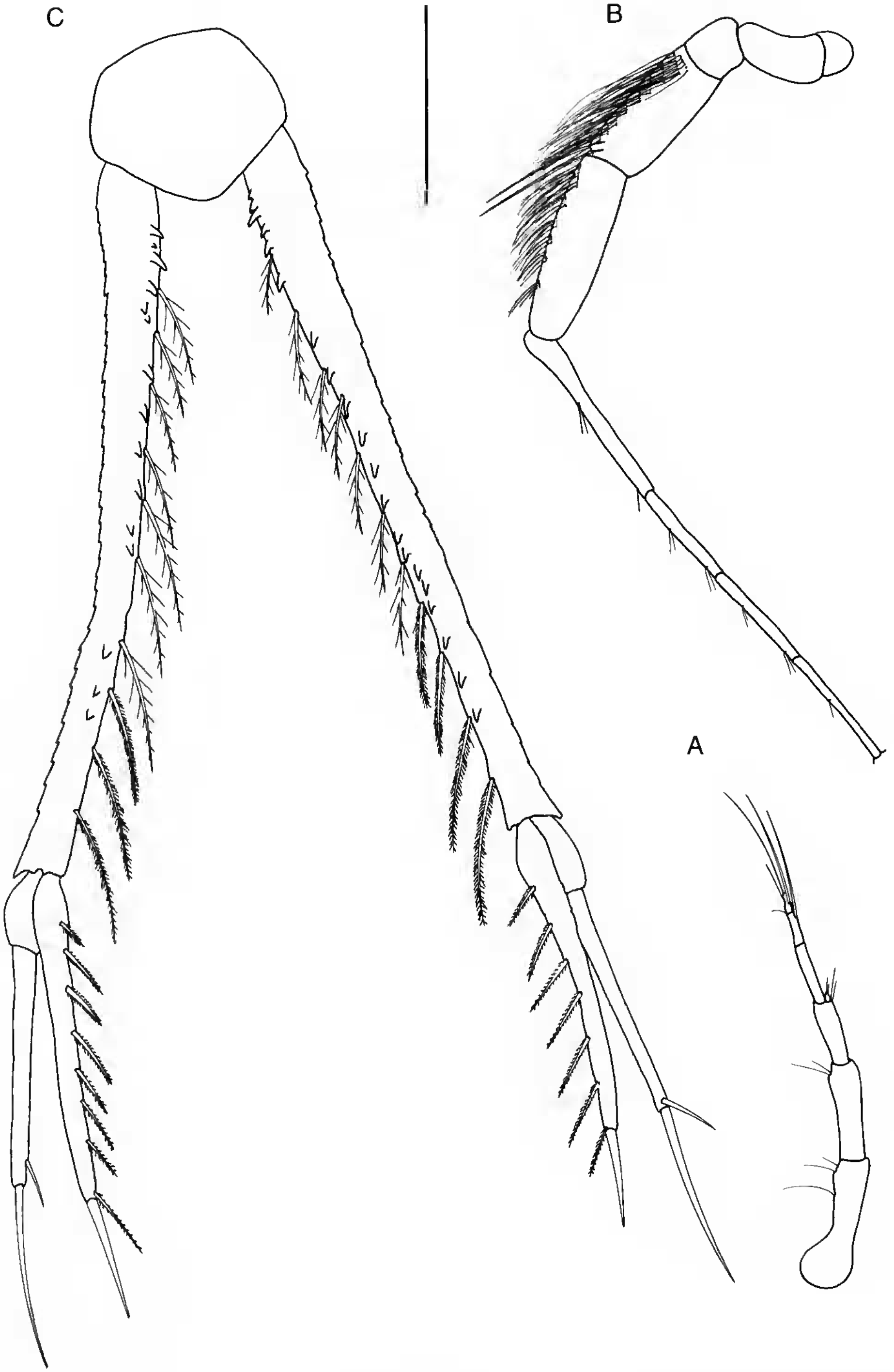

FIG. 5. — *Campylaspides abyssotrucidatus* n. sp. TAAF MD55/Brazil 1987, stn 38 DS66, 19°09'S, 37°35'W, 3450 m, 25.V.1987, adult ♂ holotype (MNRJ 7306); **A**, antenna 1; **B**, antenna 2 (only proximal portion of flagellum drawn); **C**, uropods. Scale bar: 0.5 mm.

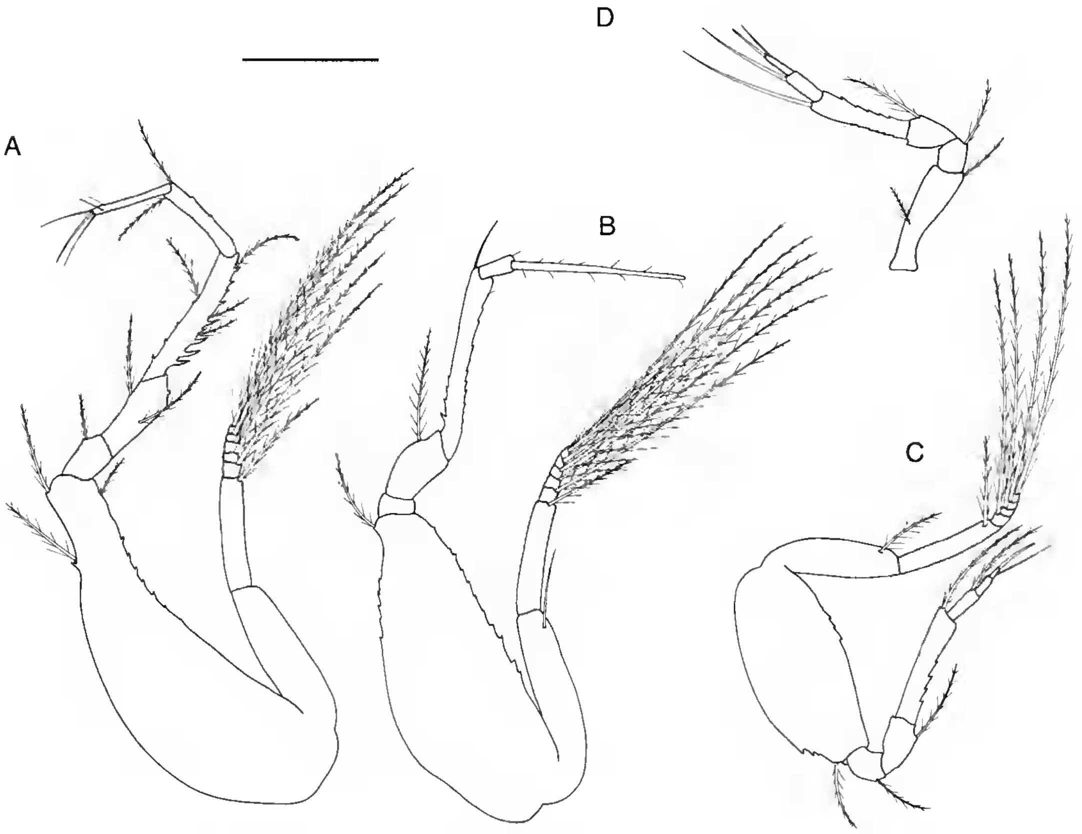

FIG. 6. — *Campylaspides abyssotrucidatus* n. sp. TAAF MD55/Brazil 1987, stn 38 DS66, 19°09'S, 37°35'W, 3450 m, 25.V.1987, adult ♂ holotype (MNRJ 7306); **A**, pereopod 1; **B**, pereopod 2; **C**, pereopod 3; **D**, pereopod 5. Scale bar: 0.5 mm.

Campylaspides abyssotrucidatus n. sp.
(Figs 4-6)

MATERIAL EXAMINED. — TAAF MD55/Brazil 1987, stn 38 DS66, 19°09'S, 37°35'W, 3450 m, 25.V.1987, adult ♂ holotype (MNRJ 7306). Sand bottom.

ETYMOLOGY. — From the Latin words *abysso*, referring to the deep sea, and *trucido*, which means to cut to pieces or kill cruelly, referring to the monstrous design of the second and third maxillipeds.

DESCRIPTION

Adult male, 6 mm. Carapace typically modified in mature male, low and elongate, smooth except for few dorsolateral spines. Pseudorostral lobes enlarged, almost half length of carapace, bearing low serrations on dorsal margin. Antennal notch shallow, anteroventral corner of carapace subacute. Antenna 1 peduncle articles 1 and 2 subequal in length. Accessory flagellum minute, main flagellum as long as peduncle articles 2 and 3 together. Antenna 2 peduncle article 5 slightly longer than article 4, both with heavy brush of setae arranged in ranks on anterior margin. Peduncle article 4 with small pedunculate structure bearing two long setae on inner surface near distal margin. Flagellum broken.

Maxilliped 1 as in *Campylaspis*, terminal article minute. Maxilliped 2 typical of the genus. Basis strong, armed distally with single microserrate seta. Merus as long as wide, with single plumose seta on medial face. Carpus with several short and one long spine on medial margin. Propodus curved toward midline, with strong distal seta projecting along dactyl. Trident-like dactyl formed of three widely spaced spines.

Maxilliped 3 basis covered with heavy scales and bearing two long plumose setae on distal margin. Ischium with distal heavy spine. Merus and carpus subequal in length and armed with heavy spines and plumose setae on lateral margins. Propodus about one third length of carpus, with heavy spines on medial margin and plumose setae distally. Dactyl half length of propodus, without strong terminal seta.

Pereopod 1 basis less than half length of remainder of leg, bearing few plumose setae on all articles. Carpus with heavy spines along lateral margin. Dactyl slender, as long as propodus.

Pereopod 2 with few setae, carpus as long as propodus and dactyl together, with a few small spines proximally. Pereopod 3 broken.

Pereopod 4 basis almost as long as remaining articles. Basis, ischium, and merus each with single distal plumose seta. Carpus longer than propodus and dactyl together, carpus and propodus with single distal plumose seta.

Pereopod 5 basis not expanded as in pereopod 4, whole limb about three fourths length of pereopod 4.

Uropod peduncles elongate, slightly exceeding combined lengths of pleonites 4, 5, and 6. Inner margin of peduncles with plumose setae on proximal two-thirds and microserrate seta on distal portion, dorsal surface armed with spines, decreasing in length distally. Endopod longer than exopod, both with long terminal setae. Inner margin of endopod armed with seven to eight microserrate setae.

REMARKS

In the possession of strong spines on the carpus of maxilliped 2 this species is closest to *C. grandis* and *C. spinifera* but differs in having a smooth carapace and having additional large spines, which look to also be useful in prey capture, on maxilliped 3.

Acknowledgments

We are very grateful to Dr M. Tavares (Santa Ursula University, Rio de Janeiro) for bringing these specimens to our attention. Working on this material also brought back fond memories of my (LW) own cruise aboard the *Marion Dufresne* in 1980, where the seas were rough but the food and camaraderie was excellent. This study was partially supported by grant DEB95-21783 from the U.S. National Science Foun-dation PEET program.

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Submitted on 16 January 1999;
accepted on 23 April 1999.